

Child Development Research

CHILD STUDY

JULY, 1930

Why Study Our Children?

FLORENCE L. GOODENOUGH

Work of Child Development Research Centers: A Survey

The Laboratory Looks at Food Problems

LYDIA J. ROBERTS

Self-Help Via Buttonholes

RUTH VAN DEMAN

What Parents Are Learning from Laboratories

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CONTENTS

July, 1930

	Page
WHY STUDY OUR CHILDREN?.....	289
Florence L. Goodenough	
WORK OF CHILD DEVELOPMENT RESEARCH CEN- TERS: A SURVEY.....	292
THE LABORATORY LOOKS AT FOOD PROBLEMS.....	302
Lydia J. Roberts	
SELF-HELP VIA BUTTONHOLES.....	305
Ruth Van Deman	
WHAT PARENTS ARE LEARNING FROM LABORA- TORIES	307
Sidonie Matsner Gruenberg	
NEWS AND NOTES.....	309
IN THE MAGAZINES.....	313
A TEMPTING MISCELLANY OF RECENT BOOKS FOR CHILDREN	314

Contents of previous issues of CHILD STUDY are indexed in
"The Education Index."

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Child Study

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Why Study Our Children?

FLORENCE L. GOODENOUGH

The guest editor explains the objectives of child development research.

WITHIN the past few years a species of the genus homo has been discovered which was previously almost completely unknown to science. This is the child of preschool age. Inconspicuous as this little creature has been in the past, now that the limelight has been fairly turned upon him he has become the center of attention for a steadily increasing group of anthropologists, physicians, psychologists, psychiatrists, educators, sociologists and others. Like many another unfamiliar object he is looked upon with some suspicion by many of them. Closer examination reveals that this suspicion is in many instances well placed. The physician finds that the foundation for many of the ailments which he is called upon to treat in the school child has been laid through neglect during the early years of life. The psychiatrist traces the origin of an appreciable proportion of adult mental disturbances to mental maladjustments occurring during this period. The teacher finds that the six-year-old who enters her classroom for the first time began his education long before, and brings with him a well defined system of habits, attitudes, interests and accomplishments which must form the basis for whatever later training he is to receive. It is, therefore, not surprising that, when once aroused, interest in the child of preschool age has developed at so rapid a rate.

This newly discovered interest, however, has not escaped the "growing pains" to which young animals and young sciences alike are subject. In any new field of investigation there is always likely to be a period when overgeneralization and the formation of hasty conclusions from inadequate data are especially prevalent. This is particularly likely to be the case when, as in the present instance, the subject is one which promises to yield results of immediate practical

usefulness in the solution of troublesome problems. To many persons, therefore, the discovery that later habits are grounded upon early habits, that the experiences of early childhood exert a profound influence upon the attitudes of the adult, that emotional reactions may be attached to new stimuli through a process of "conditioning," and so on, has seemed to offer a sure pathway to the guidance and control of human behavior. Such a pathway may exist, it is true, but the road is far from being as direct and simple as it appears to the uninitiate, and but little of the route has as yet been explored. Few people who have not had first hand acquaintance with investigations of the kind described in the following pages have any idea of the amount of time and labor involved in the establishment of a single scientific principle. In the study of the preschool child, moreover, the comparative inaccessibility of the subjects and the difficulties incident to securing their cooperation in an experimental situation have combined to tempt the investigator, with a limited amount of time at his disposal, to fall back upon the easier method of elaborating theories which he illustrates by the citation of individual cases which appear to demonstrate his points. There is, perhaps, no other field in which the *post hoc ergo propter hoc* type of reasoning, which assumes that because one event precedes another, the first must be the cause of the second, is so commonly employed. Moreover, in view of the extraordinarily rapid changes which take place in the individual during the early years and the consequent wide possibilities of variation, there is hardly any other field in which this type of reasoning is likely to be so unsafe. If we are ever to build up a sound body of knowledge with regard to the early development of children and to relate the information thus obtained to

our studies of adult behavior, we must begin by the accumulation of more basic facts. These facts must be carefully ascertained by unprejudiced observers, and they must be systematically organized with reference to each other in such a way that the checks which are absolutely essential to sound scientific work may be readily carried out.

One of the main difficulties in the way of accomplishing this has consisted in the small number of individuals who are trained both in the handling of young children and in methods of carrying out scientific research. Previous to the establishment of nursery schools in connection with special organizations for child development research, access to groups of young children to be used as subjects was also exceedingly difficult to secure. And finally, the amount of time needed to carry out an experiment with young children is usually greatly in excess of that required to secure an equal amount of data from older children or adults. The attention span of children is brief, they are easily fatigued, and in working with them it is usually necessary for the experimenter to devote a considerable amount of time to setting up friendly relations with the child and to introducing such special devices as are necessary to control his attention or to hold his interest. It appears, therefore, that the co-operation of many workers is necessary if the data collected are to meet scientific requirements.

WHAT CHILD RESEARCH DISCOVERS

The question may well be raised at this point: Since research in child development is so difficult and so time consuming, why attempt to use the preschool child as a laboratory subject at all? Why not continue to base our conclusions regarding human behavior upon experiments carried out upon the long suffering college freshman, supplemented, if need be, by incursions into the domain of the white rat and the versatile chimpanzee? What has the study of child development to offer which cannot be gained through more readily accessible methods?

A comparatively small amount of thinking will suffice for the answer. It is not sufficient to ascertain the adult status of each of a group of individuals and to compare them one with another with respect to certain traits. We need also to know the stages by which their present levels have been reached, and especially the beginning stages, since on them all later development must be based. Nor is it sufficient to determine that certain stimuli applied to adults bring forth certain responses with sufficient consistency to warrant the formulation of so-called "psychological laws." We need, if possible, to know whether these typical responses have appeared under similar condi-

tions with equal regularity from the beginning, and if not, through what kinds of particularized experiences or developmental processes they have been built up. It is necessary to know the beginning in order to gain an adequate understanding of the end. In spite of the difficulties involved in experimental work with young children, such studies should amply repay the amount of time spent upon them, through the light they throw upon the basic factors underlying human behavior.

An increasing emphasis on the genetic point of view is characteristic of modern psychological theory. More and more, students of human behavior are turning to the earlier periods of development for the solution of fundamental problems. Much that is complex and involved at later stages was simple in the beginning. From the standpoint of the isolation of single factors and the clear demonstration of general principles, stripped of confusing elements, the younger ages offer great possibility of significant contributions to scientific fact and theory.

POINTS OF VIEW—NEW AND OLD

Modern work in the study of child development bears but little relationship to the earlier descriptive and biographical studies in which a child's behavior was observed in an incidental fashion, and a series of loosely organized notes and amusing anecdotes were jotted down from time to time with little or no attempt at systematization. The early biographical records, which were made during what we may now regard as the prescientific period of child study, served a useful purpose in calling attention to possible trends or relationships which might repay further study. As a scientific method, however, the informal child biography is now properly regarded as obsolete, though it has its modern representative in the shape of more formally organized records kept under supervision by parents. This system is used in Toronto with prospective nursery school entrants. In general, however, we may say that in the modern studies of child development incidental observation is being almost wholly replaced by the study of reactions which take place under circumstances which are controlled by the investigator. We are learning that here, as elsewhere, sound conclusions are dependent upon the employment of sound techniques and that a single instance cannot be cited as evidence of the truth of a theory.

CHARACTERISTIC TENDENCIES

In reading through the descriptions of investigations in progress at the various research centers described in the following survey article entitled, "Work of Child Development Research Centers," one cannot fail to

note certain outstanding points of contrast with the studies of an earlier period. These may be summarized briefly as follows.

1. Mass attack upon problems by groups of specialists working in close cooperation with each other. The growing recognition of the interrelated character of growth phenomena, and of the complex manner in which the facts of experience operate to influence the behavior of the individual, has shown the need for concerted investigations carried out from as many angles as possible. In the studies reported in the following section we find physicians, nurses, psychologists, nutrition experts, sociologists and social workers all cooperating in the study of the same groups of children and bringing together the findings in their separate fields for examination and comparison.

2. Increasing use of instruments and mechanical devices for improving the accuracy of measurements and doing away with the variable factor of the observer. One of the great difficulties in the study of human behavior consists in the difficulty of securing accurate records of events as they occur. The child's reactions are so fleeting and follow each other in such rapid succession that the limits of human observation and record taking are soon exceeded. Omissions and inaccuracies are inevitable unless means can be devised for supplementing the eye and hand of the human recorder. Moreover, just as instrumentation in the physical sciences has revealed many important phenomena which cannot be perceived without mechanical aid, so the use of special instruments enables us to study such obscure reactions as the changes in the electrical resistance of the skin, which, in some way not yet clearly understood, appear to be related to emotional disturbances, changes in the distribution of blood in various parts of the body, slight modifications of muscular tension, and so on. Through the use of appropriate mechanical devices, the transient behavior of the child is reduced to the form of a visible record which can be observed and studied at leisure.

3. Shift of emphasis from the individual to group study. Increasing knowledge of the variety and extent of individual differences has shown the hazards of drawing conclusions from the study of single cases. It will be noted that practically all of the investigations reported in the survey article have to do with the study of groups rather than of single children.

4. Extension of all methods downward. Until the last four or five years, the study of infant development was confined almost wholly to matters of health and physical growth, plus a few investigations on simple reflexes and sensorimotor reactions, and such incidental

observations as were to be found in the biographic studies of single children. Recent years have seen the development of several series of intelligence tests for infants, reaching as far down as the age of one month; there has been at least one large scale study of the social reactions of infants toward each other, and several studies of the emotional reactions and personality traits of infants are in progress. These studies are of particular importance, since, if techniques can be developed whereby we may study social and emotional responses from their earliest inception, we may hope finally to learn to distinguish between the forms of behavior which endanger the child's future adjustment in society and those which are merely irritating to the adult. At present we are undoubtedly far too prone to regard the child as a miniature adult, and to evaluate his behavior according to adult standards. It is probable that much of our present failure to foresee and to forestall the development of undesirable characteristics during childhood is due to our ignorance as to what constitutes their beginning stages, and to the lack of any sound basis for distinguishing between the traits which are in serious need of correction and those which are relatively trivial. With the development of more sound devices for measuring the social and emotional reactions of infants and young children, problems of guidance and training should become easier to solve.

5. Longitudinal studies of large groups of children over a period of years. However much we may learn by cross-section studies of groups of children of different ages, it is only by following the development of the same children from year to year that complex developmental sequences can be studied satisfactorily. The cross-section study tells us at what ages certain forms of behavior are most prevalent, but it does not tell us which forms are most likely to succeed each other in the individual child. Studies of single children, even though carried on for long periods, are also incapable of yielding reliable evidence of this kind, since the necessary comparative data are lacking. It is, therefore, highly encouraging to note the number of organizations which are planning to follow the development of large numbers of children for long periods of time. In addition to the studies described in the next section it may be worth while to note in this connection the Stanford University study of gifted children which was begun in the fall of 1921. Approximately a thousand children between the ages of two and fourteen years with IQs of 140 or above were located at that time. All these children were given an extensive series of physical, mental and educational tests, and a large amount of social data was collected for each. The progress of these children has been followed consistently from year to year and a new report showing their

progress up to the present time will be published in the near future. The studies in progress at Toronto, under the direction of Dr. William E. Blatz, and those of Dr. Harold E. Jones at Berkeley, both of which are described in the survey article, are other notable examples of this method of approach.

6. Special studies in pure technique. One of the most outstanding contrasts between the modern studies of child development and those of an earlier period is to be found in the presentday insistence upon the technical evaluation of the methods employed. In many instances these evaluations have been so intensive and elaborate as to constitute major studies in themselves. At Minnesota, for example, Dr. Edith Boyd is making a study of the experimental error involved in measuring the external bodily dimensions in children. In the past it has been rather generally assumed that the accuracy of such measurements as standing height, sitting height, and so on, which deal with material structures that can be seen, felt and handled, can safely be taken for granted, provided that the measurements are carefully taken with suitable instruments by a competent anthropometrist. Dr. Boyd's investigation, though not yet completed, shows that this is by no means the case. The error in measuring sitting height, for example, is approximately twice as great as that involved in measuring standing height, even

though the measurements are taken by the same person and with the same instruments.

A large number of investigations on the reliability of psychological measurements, particularly the so-called "intelligence tests," has been made and others are in progress. The studies on techniques of studying social behavior in young children described by Dr. Dorothy Swaine Thomas are illustrative of another type of methodological approach. Since sound conclusions cannot be hoped for except through the employment of reliable methods of investigation, studies such as these may fairly be regarded as among the most significant for further progress.

In the survey article, a number of the leading workers in child development research has collaborated in an attempt to present a kind of bird's-eye view of the type of work which is being carried out at their respective institutions by citing examples of some of the specific studies. Such a picture is bound to be incomplete, since the inclusion of even a brief description of all the investigations in progress at these centers would fill several numbers of this journal. It is hoped, however, that these very abbreviated statements will serve to acquaint the lay reader with the scope of the work carried out at these centers, and to afford some idea of the nature and significance of the problems which we are attempting to solve.

Work of Child Development Research Centers: A Survey

Studies of many kinds, conducted in centers scattered from coast to coast, continue to add to our knowledge about childhood.

THIS survey is designed to give a general picture of the nature and variety of the studies in child development and behavior which are in progress or have recently been completed at some of the leading centers organized for the purpose of carrying on child welfare research from many angles. The data and the accompanying photographs which are reproduced in the pictorial supplement were furnished by those in charge of the work at the various centers, as listed on page 312.

THE CENTERS: THEIR ORGANIZATION AND AIMS *University of Iowa*

The Child Welfare Research Station at the University of Iowa was first organized under the direction

of Dr. Bird T. Baldwin in 1921. Since Dr. Baldwin's death in 1928, the directorship has been in the hands of Dr. George D. Stoddard. The early history of the Station and the general plan of organization are described in "Psychology of the Pre-School Child" by Baldwin and Stecher (Appleton, 1925). In the course of its nine-year history the work of the Station has been greatly extended. Its staff now consists of some sixty persons, and its research program includes a wide variety of topics. Its publications have been many and varied. Since the Iowa Station was the first of the major centers organized primarily for the study of the young child, the facts just noted afford striking evidence both of the youth of the movement and the rapid growth of interest displayed toward it.

Merrill-Palmer School

Next in chronological order as dated from the beginning of its research program is the Merrill-Palmer School in Detroit. Its purposes are stated by Dr. E. Lee Vincent as follows:

"Endowed in 1918 and established for work in 1920, the Merrill-Palmer School, in the nine years of its work, has been continually faced with the problem of selecting a reasonable program of what the Merrill-Palmer School with its staff and equipment can hope to find out about children.

"Since the school was endowed to teach wifehood and motherhood, its immediate problem was to find out how to do so, and, accordingly, the study of methods of teaching parents and preparents has been emphasized throughout its program. One cannot teach parents about parenthood, however, unless one teaches them about children, and one cannot teach them about children unless one learns what to teach. Within two years of the time its first classes for students were held, the Merrill-Palmer School found itself involved in a complex program of research which gradually came to include two main lines of work; one, the study of methods of teaching parents and students who wish to learn about children and about themselves as individuals; and the other, studies designed to obtain knowledge about children. The latter studies only are reported here.

"The major emphasis in all Merrill-Palmer work has been the integration of physical, psychological and social factors so that each may serve to interpret the others and so that all will contribute to an intelligent understanding of the whole child. Close cooperation among the various specialists has been made possible by a type of administration which permits each specialist to participate in and have knowledge of the work of every other specialist.

"One of the products of this coordinated research is the *biogram*, which is a graphic representation of all the quantitative records available for each child, all the records having been reduced to a comparable basis. Thus, almost at a glance, one can see the relative standing of a child, not only in any trait as compared with any other trait, but also in any trait as compared with that trait in all the Merrill-Palmer children who have preceded him.

"Since the organization of the nursery school, the school has recognized that study of the preschool period alone is inadequate for an understanding of the relation of preschool experiences to the rest of life or for an understanding of childhood as a whole. From the time of the first graduation from the nursery school, the alumni have been followed, each child being returned at least once a year for physical, dental and

mental examination. At the same time, information concerning the child's school, home and community adjustments is obtained from the parent. Several children now in the nursery school have been followed from birth and throughout most of the mother's period of pregnancy. During the present year a more intensive follow-up is being instituted: one group of the alumni has been organized into a club which meets weekly and which offers the same opportunity for making detailed physical, mental and social records, and the same educational contacts that were obtained during their nursery school attendance."

Yale University

The Yale Psycho-Clinic under the direction of Dr. Arnold Gesell has centered its efforts particularly about the period of infancy, though children of preschool age are also studied. Unlike most of the other organizations described, no formal nursery school is conducted. Instead, there is a "guidance nursery" to which children are admitted for observation and study for varying periods of time. A rather large clientele of parents bring their children to the clinic at periodic intervals for examination, the results of which have formed the basis for the valuable studies of early mental development which have appeared from this laboratory.

University of Toronto

The program for child study in Toronto was begun five years ago under the auspices of the University of Toronto and the Canadian National Committee for Mental Hygiene. Dr. William E. Blatz writes:

"As in most projects throughout this field, it was necessary to combine a *research* enterprise with a plan for community *service*. The aim has been, however, not to separate the two objectives but to direct the work in such a way that each should supplement and support the other. To this end, contacts have been made with the public schools, one building of which has been definitely set aside for mental hygiene investigations, with the juvenile court, an infants' home, and the provincial hospital for mental defectives. One or more members of the University staff have been definitely assigned to each of these organizations in the joint capacity of consultants in problems of guidance and treatment and as research workers in organizing and supervising the collection of data. In addition to these projects, the staff has organized a Social Science Conference among the various welfare agencies in the city for the purpose of studying some of the problems which present themselves to these agencies. A number of parent education groups is also conducted by members of the staff. There is a nursery school

in which a selected group of children is observed and studied. In connection with the nursery school and parent education groups, a consultation service for problem cases is provided. Courses for prospective nursery school teachers, leaders of parent education groups, nurses, social workers, and the like, are given in the University.

"Since the program in Toronto was instituted primarily for research, there are a few general principles which may be stated as guiding the efforts of the group. The first decision was to find out as much as possible about the 'normal' child, to get away from the purely clinical interest of the therapist into the field of the investigator of child development in general. The second aim was to develop the longitudinal method of approach as opposed to the purely statistical or cross-sectional expedient. This meant, of course, a long period study, but all of the individual investigations have been directed toward a continuous type of record with adequate control of as stable a group as possible in the community. From the past five years of study it seems as if these early hopes may be fairly satisfactorily fulfilled. In general, this plan is conceived in a form which embodies the higher age levels as well as those of childhood—of normal adolescents and adults—although it is not the purpose of this report to touch upon these aspects.

"The method of organization has been to divide the study into the following four groups, all working very closely together: parent education, nursery school, mental hygiene and educational research.

"There are operating two factors other than interlocking staff to preserve the unity of the enterprise: (a) the records in all cases studied follow the same plan and are identical, except for differences in subject matter because of age differences and opportunity for obtaining reliable data; (b) the continuous record method implies that all of the material or observations of a case be kept in a common file and coordinated by staff conferences in individual cases."

University of Minnesota

The Institute of Child Welfare at the University of Minnesota was founded in 1925. Dr. John E. Anderson is director. The Institute staff is divided into three general groups: the department of parent education, the nursery school and kindergarten department, and the research department. As at Toronto these staffs are closely coordinated. The nursery school and kindergarten serve a threefold function in providing training for the children themselves, in affording an observation and practice center for prospective teachers of young children, and a research laboratory in which children may be studied intensively from many angles over a period of several years. The

parent education department, from the beginning, has worked in close cooperation with the research department in enlisting the cooperation of parents in a number of large scale investigations, such as a study of the amount of sleep taken by young children, and other similar projects. The findings of the research department are continually utilized as teaching material, both by the parent education department and by the Institute staff in its university courses.

In its research program the Institute is fortunate in having the cooperation of several other departments of the University, especially the departments of anatomy and pediatrics, sociology, psychology, education, physiological chemistry and home economics. This permits an extremely varied research program. Excellent contacts have also been made with the social agencies in the Twin Cities who have been most helpful in providing subjects for study and in permitting access to the data in their files.

Teachers College, Columbia University

The Child Development Institute at Teachers College, Columbia University, with Dr. Helen T. Woolley as director and Dr. Lois Hayden Meek as associate director, is developing a variety of researches on the young child from the physical, psychological and sociological points of view. The physical studies have centered chiefly around matters of nutrition and anthropometry. The major emphasis thus far has been on the sociological approach in a series of studies by Dr. Dorothy Swaine Thomas described on page 298.

University of California

At the University of California the general organization is quite similar to that at the other university centers which have been described. The projects for the most part involve a dual cooperation, first with members of other science departments in the University assisting in the guidance of data collection, and second with a very large group of parents, teachers and physicians who provide essential aid in field work. The general program of the Institute is under the direction of Dr. H. R. Stoltz; Dr. Harold E. Jones is the director of research.

University of Cincinnati

The research in child development at the University of Cincinnati has centered rather closely about the nursery school. A number of investigations on varied topics has been carried out under the direction of Dr. Ada Hart Arlitt during the past three years.

Washington Child Research Center

The research of the Washington Child Research Center, under the supervision of Dr. Mandel Sherman,

is divided into investigations of the development of normal young children in the nursery section and of problem children in the consultation section.

In the nursery school section a group of twenty-four children ranging in age from two to three-and-a-half years is enrolled. The prerequisites for entrance are at least average intelligence and the parents' assurance that they will cooperate in the program of the Center. The children attend daily from 9 a.m. to 4 or 5 p.m. A complete regimen is planned to include lunch and nap as part of the routine of the nursery school.

Children who are likely to furnish material for special studies and for demonstration to classes in child behavior are accepted for three-month periods in the consultation section. By enrolling these problem cases on a three-month basis it is possible to study each child and to investigate the home conditions and other environmental influences.

The centers described here are among the most important of those organized primarily for the study of young children. Nursery schools, however, are conducted in many other colleges and universities, and the numbers who are making this a part of their program are rapidly increasing. A number of institutions without nursery schools is, nevertheless, carrying out valuable investigations on human development during the early years. Brief descriptions of some of the studies in progress or recently completed at the various centers are given in the sections which follow.

STUDIES IN INFANT DEVELOPMENT

At the Yale Psycho-Clinic, Dr. Arnold Gesell and his co-workers have for years been engaged in studying the development of behavior responses during infancy. Their aim has been to trace the stages through which the child passes in the development of certain basic skills, such as eye coordination, prehension, language development, and the like. The outstanding result of their work has been to show the remarkable orderliness with which infant development proceeds. Although different infants develop at different rates, the stages through which they pass in the course of development are strikingly similar for all. By setting up a series of simple test situations and observing the infant's reactions to them, it is possible to judge his level of development with considerable accuracy. In the development of prehension, for example, the following sequences are noted: at the age of one month the infant will give transient visual regard to a dangling wooden ring and retain definite hold of the ring when it is placed in the hand; at two months, the visual regard to the ring is definite and prolonged; at three months there is varied tactile manipulation of the ring when

placed in his hands; at four months he will close in with both hands on the dangling ring when in the dorsal position; at five months he will pick up a one-inch cube if his fingers happen to come in contact with it; at six months he will reach for and pick up the cube on seeing it; at seven months the reaching is more direct and the cube is picked up promptly and deftly, but a sugar pellet of one-fourth inch diameter can be secured only by a raking or scooping palmar prehension; at eight months the fingers are beginning to take part in securing the pellet; at nine months the thumb is opposed to the fingers in seizing the cube; and at ten months the small pellet is secured with fine "pincer-like" prehension of the thumb and finger. Individual children will show some variation from these age standards, but the order in which the different phenomena appear is much the same for all children.

At the University of California two very extensive studies of infant development are under way; these promise to yield results of much significance. These have been reported in more detail in "School and Society" for May 17, 1930. The first is the Berkeley Infant Survey in which, through the cooperation of over one hundred physicians in the city, every third child born in the district is studied by the Institute. Thus far, five hundred children have been entered in the group. For each of these the following information is obtained: the medical history of the mother, a very complete social inventory of the home and family, and a developmental history of the child beginning at birth. A second group of sixty infants has been selected for more intensive study. A pediatrician and a psychologist are collaborating in making a detailed study of the development of these children from the standpoint of physical growth, health, mental development as measured by monthly "mental tests," laboratory tests of emotional responsiveness, and systematic observations of behavior in free play situations both at the Institute and at home. In addition, the mothers collaborate by compiling a "baby book" in which developmental items are recorded as they occur. This study is now in its second year of progress.

At Toronto one of the conditions for admission of children to the nursery school is that the parents make controlled observations on the infants from birth to two years. These observations are directed toward a compilation of the developmental episodes in the child's life prior to entrance to the school. Records of sleeping, eating, emotional, vocal, social, eliminative and play habits are made monthly and kept in the school files. During the child's stay at the school, routine and detailed records are made, continuing these home records. After the child leaves the school, annual examinations are made by the school staff, and a social history is obtained from the parent. Home visits by a member

of the staff correlate the school behavior with that in the home environment. Preliminary studies of this research have been published.

For the past two years an intensive study of the development of twenty-five infants in the home has been in progress at Minnesota. The work has been in charge of Dr. Edith Boyd, a pediatrician and anatomist, and Dr. Mary Shirley, a psychologist. Through the cooperation of several obstetricians in the city, contact was made with the mothers during pregnancy. The purpose of the investigation was explained and the mothers invited to register their children. During the hospital period, daily examinations were made of each child for the purpose of studying recovery from the shock of birth. Thereafter, weekly examinations were made at the home throughout the first year and bi-weekly examinations during the second year. The first report of this study, which gives a very detailed account of the development of locomotion and general bodily control in these infants, is now ready for publication and will appear shortly in the Institute Monograph Series.

PHYSICAL GROWTH, HEALTH AND NUTRITION

The growth of the body as a whole and of its various parts is being studied as a part of the routine system of measurements at most of the centers. Among the more specialized studies in this field may be mentioned the work of Dr. R. G. Freeman, Jr., of Columbia, who is attempting to work out various indices of body build with a view to defining "types"; a series of studies on the development of posture and of certain phases of skeletal growth as revealed by the x-ray which is being done at Berkeley; and a study at Toronto of the relationship between physical measurements taken during the first two weeks of life with those taken during the nursery school period. At Minnesota, in addition to a monthly series of anthropometric measurements involving some ninety dimensions which are obtained for each child in the nursery school and kindergarten, a number of special studies has been made. They include a study of the surface area of the body, which involved the making of plaster casts of the entire body of the child. The average parent will perhaps find it hard to believe that an active, squirming three-year-old could be induced to lie motionless in a bed of warm plaster long enough for the plaster to harden, and still less that he would consent to have a plaster covering put over his entire body, including his face, with only a small aperture left for the nostrils. These children not only yielded to the experiment but gave every evidence of enjoying it. For some weeks afterward a favorite occupation consisted of "making casts" of their bodies in the loose

snow on the school playground. Since both the loss of heat from the surface of the body and the loss in water content through evaporation are dependent upon the relation of body surface to body volume, this study has much practical as well as scientific import. A second study involving something of the same technique has been used by Dr. Joseph T. Cohen in a study of the growth of the dental arch. Plaster casts of both jaws are made for all the children in the Minnesota nursery school at six-month intervals. This study affords another example of the extent to which young children, once their confidence has been gained, can be brought to cooperate in situations which adults usually consider very trying.

Practically all the centers are carrying on investigations in one or another phase of child nutrition. A more detailed account of three such studies by Dr. Lydia J. Roberts is given on page 302. At the Merrill-Palmer School the nutrition research laboratories, since 1923, have been carrying on various studies of the factors influencing the secretion of human milk. Both physiological and psychological factors are considered. At Columbia, Dr. Mary Swartz Rose and her associates have been studying the relation of diets with different proportions of cereals and vegetables to growth, reproduction and lactation in the white rat. A considerable amount of time has been devoted in the laboratory to the problem of whole wheat as a source of iron. In addition to these more general problems of nutrition, experimental work has been undertaken on the nursery school children by Elda Robb to indicate the possibilities of metabolism studies at the nursery school level. These studies involve determinations of iron metabolism (under controlled condition) and basal metabolism. The importance of the work lies in the possibility of developing techniques which can be widely applied with a view to the eventual development of norms. In the nursery school at Berkeley, a study of eating habits and food preferences is being carried out, also a study of daily variation in children's temperatures, and a statistical analysis of factors determining the occurrence of colds.

In the preschool laboratory at the University of Cincinnati, Janet Arnold has conducted a study of the influence of the texture and flavor in menus and desserts on the rate of eating. Ten children were used as subjects. A selection was made of six desserts and five menus. Each dessert was served after each menu twice on different days of the week in order that any influence of the day of the week on the rate of eating might be nullified. A daily record was kept of the room temperature, number of visitors, the weather conditions and the health record of the children studied. A stop-watch was used to time each subject each day. The experimenter checked the desserts and the menus

daily to see that the preparation remained the same.

The children were shown the dessert just before they began dinner each day. They were told, "We are having chocolate junket for dessert" or "We are having green pudding with red cherries," as the case might be. The tray of dessert was then placed on a low table in plain sight of all the children.

There was a marked difference in the rate at which the children ate the different menus and in the rate at which they ate the same menu when it was followed by a different dessert. The average time taken by the group to eat ground beef, chopped buttered carrots, baked sweet potato, chopped lettuce sandwich (whole wheat bread) and milk with a dessert of chocolate junket was eighteen minutes and forty-two seconds, whereas the average time taken to eat the same menu with pink baked apple and a graham cracker for dessert was twenty-nine minutes and forty-eight seconds. The group as a whole took longest to eat ground chicken, baked potato, chopped buttered beets, whole wheat toast, milk, followed by tapioca pudding with sliced peaches. The average time in this case was thirty minutes and forty-two seconds. All but three of the ten children ate the combination first described more rapidly than they ate other combinations of dinner and dessert.

While the small number of children used in this experiment makes it impossible to draw any general conclusions, the results are sufficiently outstanding to indicate that at least some of the variability in the rate of eating so often noticed in children is due to unwise combinations of menus and dessert.

Three studies on the amount of sleep taken by young children have been made during the past few years; the first by B. M. Flemming through the cooperation of the American Association of University Women, the second by Dr. William E. Blatz and Nellie Chant at Toronto, and the third by Dr. J. C. Foster, Dr. Florence L. Goodenough and Dr. J. E. Anderson at Minnesota. These studies show that, as age advances, the amount of sleep taken in twenty-four hours steadily decreases; but that up to the age of six or seven years this decrease is due almost entirely to the gradual discontinuance of daytime naps and not to a shortening of the night sleep. The discontinuance of the daytime sleep takes place not so much by a gradual shortening of the nap when taken but rather by increasingly frequent omissions of the nap *in toto*. Perhaps the most outstanding single finding in these studies is that the amount of sleep actually taken by children is, on the average, much less than the standards recommended by most specialists in child care and training. Since these standards have been based upon relatively little data, it seems quite probable that the recommended hours are in excess of the actual sleep requirements of

the average healthy child.

In the Washington Child Research Center, factors influencing the afternoon sleep of young children are studied by means of an apparatus attached to the bed which transmits the movements of the child and records them on a smoked kymograph. The record on the kymograph shows the number and extent of movements in thirty-second intervals. This study has been conducted for the past year and is continuing. A report of the data collected in the first eight months is to be published soon in the *Journal of Genetic Psychology*.

This investigation concerns the factors which influence the duration and depth of afternoon sleep. The study was designed to obtain evidence of the influence of morning play activity on sleep and on the time spent in bed before falling asleep, and the relation between personality characteristics and depth of sleep. The often expressed opinion that a great deal of activity in the morning is conducive to restful and relatively long afternoon sleep was not corroborated. Ratings of activity were made by classifying each child into one of three categories, namely, Activity 1, 2 and 3. These ratings were made by the workers in the nursery school section. Each morning they selected a child who was least active and rated him as Activity 1, while a child who was most active was rated as Activity 3. The other children were then compared with the two types and those who did not fit either into 1 or 3 were classified as Activity 2.

The duration and depth of sleep were measured by means of an apparatus attached to the bed through which records were made on a kymograph and timer in an adjoining room. The experimental cots were hung on springs of known tensile strength, and a rod attached to one end of the bed depressed a bulb attached to an air-tight non-resilient tube leading to the Marey Tambour on the kymograph. In this way the movements of a child were recorded by a writing pen on the kymograph on which were also recorded time intervals of thirty seconds.

It was found that children fall asleep very quickly and awaken rapidly. The greatest amount of restlessness occurs during the midpoint of their naps. Children who were rated as least active fell asleep more quickly than those rated as most active, and slept for a longer period of time.

Records were also obtained on the relative influence of indoor morning play and outdoor play. It was found that when a child plays indoors he falls asleep somewhat more quickly and sleeps slightly longer than when he plays outdoors before the afternoon nap.

Observations of the children's behavior following the afternoon nap and analysis of their personality characteristics indicate that the generally accepted

opinion that a young child requires a long afternoon nap is not verified by the data obtained.

In general the spontaneously active, interested and socially adjusted child does not spend as much time in sleep, nor does he fall asleep as quickly after going to bed, as a child who is interested but little in his playmates, who shows little spontaneity, and who is not active on the playground.

A method somewhat similar to this has been used by Chester Garvey at Minnesota in a study of the frequency and distribution of movements during night sleep. Beds with recording apparatus were installed in the homes of thirteen of the nursery school children, and records of movements during approximately one hundred nights were obtained for each. A striking similarity in the sleep curves of all the children was found. Movements are least frequent during the first hour of sleep, after which there ensues a rhythmic alternation of periods of comparative restlessness with periods of quiet. The sleep curves of children occupying rooms by themselves are more similar in form than those of children sleeping under conditions which subject them to frequent disturbances. This suggests that there may be a typical rhythm of movements during sleep, and that departures from this characteristic pattern are for the most part due to external disturbing factors or to transient physiological causes.

MOTOR DEVELOPMENT, LANGUAGE AND INTELLECTUAL DEVELOPMENT

At Washington one of the problems under investigation is the relative influence of specific practice and of general experience in the development of motor skills. This study is being conducted by Dr. J. A. Hicks as a continuation of his previous study at the University of Iowa in which he found, in general, that everyday experience in a broad environment is probably as important in the development of special skills as specific practice.

A comparative study of tapping rates in kindergarten children and college students at Minnesota has shown that the children most nearly approach the adult speed in movements involving the larger muscles of the forearm, while the difference between the two groups is most pronounced in the finger movements, and is greatest of all in the case of the little finger. The progress of development from the fundamental to the accessory muscles is clearly evidenced by this study. The principle involved has much practical bearing upon the kind of play materials suited to young children and the type of task which they may be expected to perform.

Studies of the development of hand preference are

in progress at Berkeley, Minnesota and elsewhere. To these investigations, which have always been of much interest to parents, teachers and scientists alike, have recently been added the questions of foot preference and of eye dominance, and the relationships between them are being studied intensively.

A study of the development of language in twins, carried out by Dr. Ella J. Day at Minnesota, has shown that on the average twins of preschool age are considerably retarded in language development as compared to single children. It is believed that this retardation is due to the fact that twins spend so large a proportion of their time in each other's society, during which time the speech of the co-twin rather than that of an adult or an older child is used as the model for imitation. A practical conclusion to be drawn from this is that the parents of twins or of single children born at close intervals should take special care that their play with each other does not operate to deprive the children of their normal share of adult attention and conversation.

EVALUATING MENTAL TESTS

Mental tests, usually of several kinds, form a part of the routine examinations in all of the centers reporting. From the research standpoint, the interest in these tests centers chiefly around questions relating to their technical adequacy and to factors influencing the child's performance in the test situation. It is perhaps not incorrect to say that the children are being used to evaluate the tests, rather than that the tests are used to measure the children. As a result of these studies, new tests or modifications of old tests are being worked out in several places. Dr. Rachel Stutsman at Merrill-Palmer has recently completed the standardization of a new scale which has unusually high interest value for young children, and a scale of the Binet type with verbal and non-verbal elements treated separately is in process of standardization at Minnesota.

SOCIAL BEHAVIOR AND PLAY INTERESTS

The most extensive of the recent studies on the social reactions of children toward each other has been carried out at the Child Development Institute, Teachers College, Columbia University, under the direction of Dr. Dorothy Swaine Thomas. Preliminary studies were published last summer in *Child Development Monograph No. 1, "Some New Techniques for Studying Social Behavior."* This research has been directed toward the study of the overt social behavior of nursery school children. The "normal" social situations of the nursery school are the situations studied—and the aim of the research has been to develop methods for controlling the observer. The ultimate

aim is to work out behavior sequences, and possible cause-effect relationships in the social behavior of young children—an aim which can be met only by the use of statistical methods. This has occasioned the necessity of inventing definite quantitative units into which social behavior can be broken. Equal emphasis has been placed, however, on the importance of developing techniques that may tap as many important aspects of social behavior as possible. This implies that the data be of themselves significant, not merely valuable because objective.

To meet this latter need, the research program includes studies which are based on descriptive records of happenings, careful studies made from an historical rather than a statistical approach. This aspect of the research is well illustrated by Alma Perry Beaver's group personality study, which was centered around an embryonic "gang" of three three-year-old boys, and which included a daily record of their manifold interrelations over a period of eight months. We get interesting clues as to the factors involved in leadership, in social exclusions, in alliances made with children outside the "gang" and other points. Such accounts of social behavior are invaluable as hypothesis-forming material for more objective studies of the group phenomena.

The technique developed largely by Margaret Barker in her study of *Social-Material Activities* involves following a child for a given period in the nursery school and charting and timing on a floor plan his activity as he moves from person to person and thing to thing. The recorder snaps a stop-watch each time the child starts something new, and indicates briefly the nature of the activity. Such charting yields quantitative data as to the time spent on each activity, the number of contacts made with children and adults as compared to things, and actual distance covered. The method showed marked and interesting differences between the sixteen children studied during the first year. For instance, the time spent in clear-cut material activity averaged sixty-two per cent for this group, but varied for individual children from twenty-seven to seventy-nine per cent. The proportion of activity in which other children or adults were involved varied from nine to forty-nine per cent. Activities which concerned the child alone, and no person or thing, varied from less than one to seventeen per cent. This indicates that, even at this early level, differences in social behavior have become definite characteristics.

Observation and records, as well as common sense, indicated that a highly significant aspect of social behavior might be tapped by studies of the physical contacts children make, as compared with those they receive from other children and adults. A technique

for recording physical contacts has been developed by Alice Loomis. After a preliminary observation period the kinds of physical contacts were divided into tentative categories. These are in terms of hit, point, pull, push, caress, exploration, accident, assistance, and it was always indicated whether the child being watched was the aggressor or the victim. The response of the other child involved is recorded in terms of passivity, cooperation, resistance or flight. The social significance of this technique lies in the fact that it indicates characteristic individual differences in children's behavior if they can be observed over a sufficiently long period of time. Most of the children observed, for instance, show a tendency to give and take physical contacts about equally. Some extremely passive children initiate very few contacts. Certain of those whom we might designate, tentatively, as "leaders" initiate a great many contacts. Important differences are also suggested with regard to the breadth of social interest: some children make and receive contacts with only one or two other children; others have a variety of contacts with all the other children in the nursery school.

Language is an excellent, as well as a long recognized, index of social behavior. At the present time, special emphasis is being put on a group of language studies in the sociological department, the results of which will be ready for publication this summer. Accurate stenographic records of the consecutive remarks and babblings of each of the seventy-nine children from the time of arrival to the nap period form the basis of these studies. The language is recorded in such a way that the time, place, situation and stimuli also appear. Each child's record is taken on three or four different non-consecutive days, and covers the child's normal nursery school activities from the moment he arrives at school until he takes his afternoon nap. These long, detailed records are an important source of behavior and personality studies, but they are also rich in material suitable for statistical analysis. Both statistical and non-statistical studies are under way. The psychological examination has been used as a source of data on social behavior by Janet Nelson and others. The factors studied were the amount of urging and praise used with different children by the examiner, and the number of times resistance was shown by the child. Striking individual differences among the twenty-eight children studied were found.

Several studies of social behavior have recently been completed at Minnesota, of which a study of dominance-submission by Marjorie Walker, and a study of the factors influencing the formation of friendships among nursery school children by Robert Challman may be mentioned here. Miss Walker's study is based upon a controlled situation in which two children were placed together in a room which contained only a

single toy, and their ensuing behavior was classified and recorded by a concealed observer. The outstanding result of Mr. Challman's study, which was based upon the observation of spontaneous group formation in the nursery school, was the finding that preference for children of the same rather than the opposite sex is very well marked even among the two-year-olds. Only one exception to this rule was found in the entire group of thirty-three children studied.

At the University of Cincinnati, Dr. Cornelia Atkins made a study of the play interests of a group of ten two-year-old children as shown during a six-month period. A record was made of the number of times that group play occurred, the size of the play group, the materials used, the type of play, and the length of time that each kind of play was persisted in. It was found that as the children grew older the typical size of the group increased from three to four children, and the length of the play periods also increased. The five most favored toys were boxes, kiddie cars, the slide, sand and trains; the five least favored, peg boards, crayons, saws, wheelbarrows and doll carriages.

EMOTIONAL BEHAVIOR AND PERSONALITY TRAITS

Studies on the psycho-galvanic reflex are in progress in Columbia under David Wechsler and Dr. Lela Mae Crabbs, and at California under Dr. Harold E. Jones. In the Regal Road School project at Toronto, weekly records of the children's behavior are collated upon individual report forms which serve as a permanent guide to the child's school adjustment. Provision has been made for an accurate follow-up of these children after they leave school. In this way it is hoped that by recording the adult adjustment the early behavior history of the children may be evaluated. As the material from this study accumulates, it should constitute one of the most significant contributions to mental hygiene research that has ever been made.

A second study of much significance is in progress at Berkeley. Somewhat over three hundred of the children in the Berkeley survey are being included in a study by the staff of the Institute habit clinic. As the children reach twenty-one months of age, they are brought to the Institute for a series of examinations, including a habit inventory directed particularly toward the analysis of developmental problems. The total group is sectioned into an "experimental" and a "control" series on the basis of carefully matched pairs. The children in the experimental series, during their entire preschool period, will be carried through the regular guidance regimen of the habit clinic, while the control group will remain without further attention except for a periodic reinventory. They believe that the usefulness of these training and adjustment procedures can

be fairly accurately estimated by studying the development of these two groups; hitherto it has been difficult on the basis of school or clinic data to distinguish at all clearly between readjustment due to differential educational measures and growth which is a normal expression of intrinsic maturing.

At the Washington Center the relation of environmental influences to the development of specific emotional responses is under investigation following the studies made on the emotional development of infants. A series of experimental situations are set up in which the emotional reaction of each child is studied—whether anger, fear, antagonism, retreat and so on—and children are tested at various intervals under known changes in environmental conditions. The study is as yet only in the preliminary stages, but thus far the evidence corroborates previous results which showed that specific emotions, often thought to be only incidentally influenced by environment, are not only brought out but fashioned by experience. The relation of nursery school training to the development of personality was investigated by comparing the personality characteristics of nursery school children at the Center with a group which did not receive specific training. A group of twenty-two nursery school children was tested for their personality characteristics shortly after their admission to the nursery school, and again at the end of two, four and six months. A control group of twenty-one children without nursery school training was tested during similar intervals. Both groups were comparable in intelligence and in the educational attainment and social status of their parents.

The results showed that children of the nursery school group became less inhibited, more spontaneous and more socialized with training. They developed more initiative, independence, self-assertion and self-reliance. Their curiosity and interest increased markedly and social habits developed rapidly. The probable reasons for the development of these traits to a much greater extent than in children without nursery school training are the advantage of association with other children of a similar age and the consequent necessity for the development of certain personality traits in order that an adjustment may be made.

An investigation of spoken phantasy in young children was also conducted and will be carried on during this year. Spoken phantasy was investigated by means of a dictograph machine, the conversation of a child being objectively recorded.

It was found that phantasy can be divided into two types, namely, casual and systematic. The majority of children showed the casual type of phantasy. It occurred frequently and the content was determined by the specific objects in the environment. These chil-

dren could be easily diverted from their phantasy and were not disturbed emotionally when interrupted. Systematic phantasy occurred in a small percentage of children and only when they were alone, in most cases after going to bed. The content of systematic phantasy was found to be directly related to disturbing conflicts. The subject matter of casual fantasies changed continuously whereas the content of systematic phantasy remained practically the same after five or six months of observation. Evidently systematic phantasy indicates definite conflicts which the child is unable to solve, and its purpose is a compensation for his difficulties.

At present a study is to be conducted to determine the relationship between systematic phantasy and the development of hallucinations in children. Evidently the origin of hallucinations and of systematic fantasies is similar, that is, they occur as a result of conflicts which a child is unable to solve. The content of hallucinations and of systematic fantasies is also influenced by similar factors. A solution of a child's conflicts decreases systematic phantasy and also decreases hallucinations. Again, the details of systematic phantasy and of hallucinations are both influenced by previous experience. An analysis of the histories of twenty-five children below twelve years of age who had hallucinations shows a long period of systematic phantasy before hallucinatory experiences developed.

"NATURE VERSUS NURTURE"

The Berkeley Survey has contact with many problems which require supplementary data from studies of older children. One of these is the problem of the influence of birth order which is being studied through a comparison of first and second children over a considerable range of age levels, and with reference to various phases of personality. Another is the problem of hereditary factors in development with especial reference to character traits other than those which have usually been included in studies of family resemblance. In this connection, the investigation of twins has often appealed to the psychologist and biologist as an inviting method of inquiry, particularly when it is possible to make a comparison of likenesses in "identical" twins with "same-sex fraternal" twins. The present records include somewhat over one hundred pairs of each of these two types of twins. The older of these are being studied at school and at home, while the preschool pairs are brought in to the Institute for a cumulative series of observations. The belief is commonly held that identical twins have an origin in a single germ cell, and that any differences between them must be due to nutureal factors acting after fertilization: in embryonic and fetal life, at the time of birth or in the

postnatal environment. Ordinary fraternal twins, however, differ not only by reason of environmental factors but also because of the influence of a somewhat different hereditary make-up. Thus nature has provided us with an experimental group (the fraternal twins) in whom the influence of a certain variable (heredity) can be observed, while with a control group (the identical twins) this variable is held constant. Theoretically, such a control should be equally effective, whether we are investigating differences in intelligence, emotional stability, social responsiveness, nutritional status, susceptibility to diseases, or any other definable trait which is of interest in connection with problems of child growth and welfare. The possibilities for practical application are also significant.

FAMILY CHARACTERISTICS

A similar study on the characteristics of identical and fraternal twins has recently been made by Dr. Frank N. Freeman at the University of Chicago. The results correspond to those obtained by other investigators in that physically identical twins also resemble each other in their mental characteristics more closely than do those who are physically dissimilar.

At Minnesota, Josephine Conger is engaged in a study of the reliability of certain tests designed to measure the mental status of young infants, and is comparing the test standing of a group of twenty-five infants at one, two and three months of age with the intelligence test ratings earned by their mothers. Since these infants are institutional babies, born and reared under practically identical conditions, the study should have special interest for students of heredity. A study of the inheritance of musical talent is being made by Mrs. Ruby Friend who has given the Seashore tests for musical ability to a group of twenty-seven kindergarten children and also to their parents.

THE CHILD'S ATTITUDE TOWARD RESEARCH

Two objections to using young children as laboratory subjects are occasionally heard. The first is based upon the assumption that the experimental situations set up are likely to be particularly fatiguing to the child, who is thereby subjected to undue strain and nervous stimulation. The second stresses the "artificiality" of the laboratory and questions whether results so obtained have any real bearing upon child behavior as it is displayed in everyday life. Both criticisms are largely due to a lack of understanding of the method employed, and are well met in the following comments by Dr. Harold E. Jones:

"The technique of the laboratory is often described as artificial in its application to child study. In most

of our situations, however, every effort is made to have the laboratory experience a natural and happy one. It is unnatural ('controlled') only in the sense that the environment is rather definitely known and described. The stimuli may include blocks (as in a mental test), bright colored jackets (as in tests of motor facility in dressing), victrola records (as in a study of motor rhythm), or a series of mild emotional stimulations employed in our instrumental studies of emotion. The tasks to be performed are enjoyable, and the children are put at ease. That they do enjoy themselves is evidenced by the fact that on occasions they run away from the play group to the laboratory; the appearance of a laboratory observer in the play yard is often a signal for requests to be taken in to 'play a game.'"

It should also not be forgotten that much of the

research work carried out in this field is making use of systematic records of everyday behavior as a source of data. As Dr. William E. Blatz points out, the "field itself" is often the best laboratory, provided always that the data for the individual records are collected while the life history is *in the making* and not in retrospect. The mother who might otherwise be concerned as to the possible effect of such investigations upon her child may rest assured that the safeguards employed are such that no possible harm can result. As the knowledge of child development which accrues therefrom becomes organized and coordinated, we may fairly expect that the information so obtained will not only contribute to the advancement of science but will be of service to everyday parents who desire to rear their children successfully and happily.

The Laboratory Looks at Food Problems

LYDIA J. ROBERTS

Our skill in presenting food to children, as well as our knowledge of nutrition, is being increased.

THE University of Chicago has no Institute of Child Welfare or separate department of child study as have most of the other institutions whose work is reported in this series. It does, however, have a Department of Home Economics which is concerned with all the problems of home life, and among these the wholesome development of children is obviously one of the most important. Numerous problems in the various phases of child welfare have, therefore, been studied from time to time in this department. Owing to the limitations of space it seems best to confine this report to a brief statement of some of the methods and results in three lines of research in which some of our major contributions to child development have been made.

STUDIES IN CALCIUM BALANCE

There is no more important problem in the growth and physical development of children than that of calcium. Calcium, together with phosphorus, is being constantly deposited in the bones and teeth of a child, beginning some two or three months before birth and continuing until growth is completed. Moreover, even after growth of bones and teeth has ceased, it is still deposited in smaller amounts throughout life to replace that constantly being lost from the body. It is this

calcium phosphate which largely gives the rigidity to the bones and teeth, and a lack of it causes imperfect teeth, and the bowlegs, pigeon breast and other skeletal deformities of rickets. The problem of how to cause enough calcium phosphate to be deposited to produce normal bones and teeth has been studied untiringly for years in numerous nutrition laboratories throughout the world.

One method of studying the calcium problem is by means of the balance experiment, and it is this method which has been used in a series of studies in this department. During such an experiment the children or other subjects are fed a weighed diet containing known amounts of calcium, and the bodily excretions—both urine and feces—are collected. By chemical analysis the calcium, both in the food and in excretions, is determined and the amounts in the two compared. When the calcium intake is approximately equal to the outgo—that is, when the two balance each other—the body is said to be in calcium balance. When the amount excreted is *more* than that in the food, the body is said to be in negative balance—that is, the body is actually losing some of the calcium it already has. When, however, the amount excreted is *less* than the amount eaten in the food, then the body is said to be storing calcium. It is obvious that no individual should be in negative balance; that normal adults should al-

The Joy of Living—As Found in the Laboratory



ALWAYS ROOM FOR ONE MORE—BY EMPLOYING PLAY APPARATUS ON WHICH AS MANY AS TWELVE CHILDREN CAN TAKE PART, EGOCENTRICITY AND LEADERSHIP CAN BE STUDIED AS THEY DEVELOP WITH SOCIAL CONTACTS.

GIVE AND TAKE—AT FORTY-THREE WEEKS THESE BABIES ARE EXPERIMENTING WITH THAT INTERESTING PART OF THE ENVIRONMENT CONSTITUTED BY ANOTHER CHILD.



POSTURE PROFILE—CHANGES IN POSTURE ARE RECORDED AGAINST A RULED BACKGROUND.



BUDGING INTEREST—AT NINE WEEKS THIS BABY'S EYES AND FEET RESPOND TO A DANGLING TAPE, BUT REACHING WITH THE HANDS IS A REACTION THAT HAS NOT YET DEVELOPED.





WATCH YOUR STEP—A BOARD ON WHICH A CHILD PRACTICES OUTWARD ROTATION OF THE FEET IS USED IN THE STUDY OF THE RELATIONSHIP BETWEEN POSTURE AND THE FOOT ARCH.



"WALKING" MOVEMENTS AT FOURTEEN WEEKS—FROM BIRTH THE INFANT AT EACH STAGE OF DEVELOPMENT EXHIBITS TYPICAL MOVEMENTS AND REACTIONS WHICH ARE NOW BEING STUDIED WITH INCREASING ACCURACY.



MENTAL TESTS ARE FUN—CHILDREN FREQUENTLY BEG THE PSYCHOLOGIST TO PLAY MORE GAMES WITH THEM.



ACCURACY IN PHYSICAL MEASUREMENT IS IMPERATIVE—THE CHILD'S COOPERATION AND THE EXPERT TECHNIQUE OF THE EXAMINER ARE NOT SUFFICIENT WITHOUT THE MOST DELICATELY SCALED APPARATUS.

[For permission to use these photographs CHILD STUDY wishes to acknowledge its gratitude to the Institute of Child Welfare, University of California; the Institute of Child Welfare, University of Minnesota; Merrill-Palmer School; Washington Child Welfare Research Center; and the Bureau of Home Economics, United States Department of Agriculture.]

AN EXPERIMENT IN LEARNING — THE FRIENDLY INTEREST OF THE ADULT IS ESSENTIAL IN SETTING THE CHILD AT EASE.



STUDYING SPEED OF REACTION—APPARATUS FOR DELICATE TESTS MAY BE SO ARRANGED AS TO ENLIST THE EAGER COOPERATION OF EVEN THE VERY YOUNG CHILD.

WHICH IS WHICH—TAKING THE FINGER AND HAND PRINTS OF TWINS IS ONE MEANS OF STUDYING THE CHARACTERISTICS OF IDENTICAL AND DISSIMILAR TWINS.



WALKING THE PLANK—THIS FAMILIAR TEST OF MOTOR ABILITY IS AS INTERESTING TO THE SMALL PERFORMER AS IT IS TO THE RECORDER.



SELF-HELP SUIT WITH DROP FRONT CLEVERLY
DESIGNED TO LOOK LIKE POCKETS.



THREE BIG BUTTONS AND ALL IN FRONT MAKE
THIS A SELF-HELP FROCK.



WHEN BETTY PULLS THE STRINGS, THE SELF-HELP BIB SLIPS
INTO PLACE.



ONE-PIECE PLAY SUITS WITH EVERYTHING PLANNED FOR
COMFORT.

ways be in calcium balance; and that children and pregnant women should always be storing calcium. Moreover, we may say in general that the greater the storage of calcium during the growth period, the better may we expect the quality of the bones and teeth of the child to be.

By means of such balance experiments, the factors affecting the use and storage of calcium in the body have been studied. In one such experiment, for example, in which two girls of ten and twelve years were fed a definite amount of calcium (provided by milk) without orange juice, and later the same amount of calcium with orange juice, it was found that the storage of calcium was decidedly greater in the orange juice period. What it is in orange juice that helps calcium to be utilized by the body is not known. It may be vitamin C, or it may be organic acids, or other factors. At any rate the fact offers an added argument for the use of orange juice, or its equivalent, in the diets of children.

In similar manner the problem of whether the calcium in evaporated milk is used by the body as well as that in the ordinary pasteurized milk was investigated. Four children served as subjects—two girls eight and ten years of age, and two boys of three and four. Keeping other foods in the diets exactly the same throughout the experiment, the children were given pasteurized milk for one period, and then evaporated milk for another, calcium balances being determined as described above. The results showed that calcium from evaporated milk is used fully as well as that of pasteurized milk. Indeed, in three of the four children it was even a little better utilized. There need, therefore, be no hesitancy on this score in employing evaporated milk whenever its use is otherwise indicated. Other studies are now in progress on the effect of cereals on the storage of calcium, and particularly on the problem of whether the new irradiated cereals recently put on the market favor the storage of calcium in normal children as the manufacturers hope.

Most important of all our calcium studies, however, is the one by Dr. Coons on pregnant women. The storage of calcium in the bones and teeth of the fetus is so great that the question of how much calcium the mother must take in her diet to provide for the baby, without sacrificing calcium from her own bones and teeth, is a very practical one. Nine pregnant women served as subjects for this experiment, several of them three or four times, at different stages of pregnancy. In these experiments the women lived in their own homes and ate their usual diets. But food and excretions were analyzed for calcium and the balances determined as before. Some of the women were having a quart of milk or more, others a pint, and some little or none. Perhaps the most significant finding of this

study is that *every woman who had less than one quart of milk in her diet was either in negative calcium balance or was storing less than the needs of the fetus.* It is certain that the bones and teeth of the mother were sacrificed and perhaps those of the baby likewise. This study offers a graphic proof for what has long been advocated by nutritionists, that at least a quart of milk a day is required in the latter months.

FOOD REQUIREMENTS OF CHILDREN

In feeding children it is of fundamental importance to know the food requirements for children at different ages and in various conditions of activity. And yet little is known definitely of the amounts of energy, protein, calcium, phosphorus, iron and other dietary constituents needed during the growth period. This problem has been attacked in this department, the greater part of the work done thus far having been on the energy needs. The problem of determining the basal energy needs is not a difficult one. This means the minimum amount of food energy required to maintain the body processes—the heart beat, the respiration, the secretions, etc.—when the body is at its lowest level of activity. It is determined with the child lying, relaxed, without food, at a non-stimulating temperature, by means of special apparatus designed for the purpose. Numerous studies of this type have been made in this and many other laboratories throughout the country. The problem of the child's total energy needs is, however, not so easily determined, for it is impossible for a child to carry on his normal varied activity in the small room of a calorimeter or attached to a respiration apparatus. At present, therefore, the best method of determining the total energy needs is to determine the amounts of food consumed by large numbers of healthy, well developed, normally active children, and to take the averages as standards for different ages. Such studies are, however, very expensive of time and labor. To find the food consumed by one child it is necessary to go to the home and weigh every food eaten by the child for every meal for at least one week. Not only so but the separate foods that go into all made dishes must be weighed in the kitchen during the preparation of the meal. The food values of the separate dishes and finally of all foods eaten by the child must be calculated. To secure data on one child, therefore, requires the full time of a trained worker for a week or longer. Since numbers of children at each age must be studied before standards can be obtained, the magnitude of the task is evident. A saving can often be accomplished by having a staff of workers and using a group of children in a boarding school, home or orphan asylum as subjects. The trouble with this method is that it is diffi-

cult to find an institution in which children are given an unrestricted diet of essential foods, and in which the children measure up to the best standards of nutrition.

Recently a method of saving time on home dietary studies has been found. The mothers have been taught how to weigh the diets, to keep records and to save samples of all foods. These samples are collected daily, aliquot parts weighed out, dried, burned in a specially devised apparatus called the oxycalorimeter, and the food values of the diets eaten computed as before. One worker can thus do several children a week instead of but one as formerly.

Many studies of all types described above have already been made and others are in progress. More than fifty preschool children have been studied in their own homes and others in an orphan asylum. Two groups of about thirty-five adolescent boys each—one doing active farm work, the other the ordinary activity of boarding school boys—have recently been added to our list, as have also about ninety studies of adolescent girls, some ten of these in their own homes, the remainder in institutions. Though much more work is needed before standards can be established, certain things are already evident. Chief of these is the fact that the energy needs of superior children are well above the present standards. One healthy five-year-old boy, for example, regularly consumed 2,000 calories—as much as the needs of his mother—and the three-year-olds all averaged about 1,600 calories.

OTHER FEEDING PROBLEMS

In addition to the food requirements of children there are numerous other problems of feeding. Early in our experience with nursery school children, it was discovered that it is far easier to plan what children should eat than to get them to eat it. The problems of likes and dislikes, of food prejudices, and—most difficult of all—of the child who does not want to eat at all, have all been encountered, and studies of the factors involved in such problems have been undertaken. Since our work on the non-hungry child has been reported in the November issue of this magazine, it will be omitted here save to say that the proportion of children who do not want to eat is far greater among the city educated and well-to-do than in the country or among the city poor. The extreme amount of attention and solicitude given by the prosperous parents with time to devote to their children is undoubtedly the chief responsible factor. An excellent illustration of this was furnished by one of the balance experiments carried on with preschool children in an orphan asylum. The children were selected largely because of the normality of their eating. In less than a week these

children who had ordinarily finished eating a generous meal in twenty minutes had developed into as perfect a set of "dawdlers" as could be found in any of our "best" homes. The explanation was simple. These children had early sensed that it was a very important matter to those in charge that they should eat all their food, and that by not doing so they could secure attention, and perhaps even be fed—results well worth the effort to these children to whom both were unknown luxuries.

IMPORTANT BY-PRODUCTS

In other experiments also some of the by-products were often as significant as the findings on the major object of the study. Interesting light was thus thrown, for example, on the question of monotony in the diet. In one experiment, for instance, four preschool children were fed exactly the same breakfast, dinner and supper every day for about three weeks. Moreover, the dessert for both dinner and supper every day was canned peaches. Yet not one comment was made by the children about the sameness of the diet. Not only so, but at the close of the study when they were given an entirely different meal with ice cream and cake as a party, they not only expressed no joy—save at the candles on the cake—but having finished the ice cream and cake, they inquired, "Where are the peaches?" And this from children who had had peaches more than thirty times in succession! Exactly the same attitude was displayed by two older girls eight and twelve years of age. At the close of their study they were given a picnic with the privilege of choosing what foods they would have. And what did they choose? Bacon, bread, lettuce, bananas, peaches and evaporated milk—exactly the foods they had been living on for three weeks! Such results seem to indicate what some of us have long thought—that children are creatures of habit, that they like monotony, and that the need for a "change" is largely in the mind of the mother.

The ease with which a new food is accepted when it is presented in a matter of course attitude was also illustrated. The first morning evaporated milk replaced pasteurized milk in the preschool group, one child after taking his first taste asked, "What kind of milk is this?" The answer was, "Cow's milk." After another taste came the question, "What did the cow eat?" A simple explanation was given followed by the statement that all were going to drink this milk now, and thereafter the milk was accepted as a matter of course.

This result was later confirmed in a study of two hundred and five children in seven different nurseries and kindergartens, in which eighty-five per cent of

all children accepted evaporated milk as a matter of course the first time it was presented to them as a beverage. In groups where the adult in charge presented the milk in a casual, matter-of-fact manner the acceptance was much higher, ninety-eight per cent in one case; but in groups where the one in charge—

or perhaps a child—showed her own dislike either by word or act, the acceptance was less. These and other studies confirm our already firm belief that the attitude with which a food is presented to a child is an all important factor in determining the child's acceptance of it.

Self-Help Via Buttonholes

RUTH VAN DEMAN

Neither good taste nor comfort is sacrificed when the government designs children's clothes.

Now come self-help clothes for the preschool child. Just as his toys, his fork, his chair and many other of the things he uses every day, so are his clothes assuming an educational importance not thought of a few years ago.

There is, of course, nothing new in the idea that clothes affect mental and physical growth and well being. The psychological and hygienic significance of clothing is as old as the race. In one form or another it runs from the sanctions and taboos of primitive peoples down to the philosophical thunderings of Thomas Carlyle on the thesis that clothes make the man. Not until the new schools of psychologists began to publish their findings, though, did we realize how definitely the inhibitions, complexes and other mental quirks of adult years may be rooted in seemingly trivial circumstances of childhood.

So the Bureau of Home Economics, taking its cue from this new science of psychology, has set about designing children's clothes from a new angle. For once, style is not the main thing. A certain smartness, though, there must be to make any clothing design popular nowadays. These little garments have style, and more. "Style plus," the advertisers would probably call it, the plus in this case meaning a cut that encourages good posture and good personal habits, and that gives even to the very young a sense of ease and comfort in their clothes.

Being one of the research units of the United States Department of Agriculture, the Bureau looks at the clothes question also as a means to better utilization of those textiles which are economically important to American agriculture. To accomplish both these aims at once, specialists in the clothing laboratories of the Bureau in Washington are in constant communication with such textile trade organizations as the Cotton-

Textile Institute and the Wool Institute. When promising new fabrics come from the mills, the Bureau makes them into children's clothes. Or if the right fabric cannot be located for a particular garment, one of these textile associations arranges for its manufacture.

With nursery school directors and mothers there is just as close cooperation. Every garment is tried out on real children under the eye of a teacher or some one else equally keen to see whether it stands the test of everyday use. On the strength of these reports, the new design is made public or is revised until it becomes thoroughly practicable.

So much for the way the Bureau goes about its scientific study of children's clothing.

Suits for the small boy, dresses for the little girl, and sun suits, winter play suits and bibs for both, have been developed on this plan. The romper designs first put out are being redrafted because fashion, or whatever is the name for the mysterious force that makes a garment "the last word" one year and "simply not worn" the next, has, for the time being, ruled out rompers for any but the infant of creeping age.

FASTENING IT HIMSELF

How and where garments fasten seems to make the chief difference in whether a youngster can dress and undress himself. In these suits and dresses the rule is to put openings in the front if possible. This enables a young child to tell the front from the back of a garment, and, of course, seeing is a great help in learning to operate fastenings. Then too only fastenings tried by children and found workable are used. Buttons, for instance, are few but sizable. A young child's muscles are not sufficiently coordinated to make

it easy for him to push small buttons into small holes. In fact some children can manage loops more easily than buttonholes, and with heavy fabrics, slide fasteners best of all.

REDUCING THE BUTTON SCORE

The little boy's trousers designed by Clarice L. Scott are perhaps the most striking example of how the self-help idea can be applied. Compare the trig little garment, with its clever drop front disguised to look like pockets and its six buttons, with the sailor or Oliver Twist variety common among ready-to-wears. The button score on these commercial suits sometimes runs as high as twenty. The small boy with his waistline so studded with buttons is hardly at fault if he fails to learn good toilet habits.

The dresses and blouses are minus collars, but no one misses them. Simulated collars or yokes take their place in the design. These flat, stitched-down neck finishes are far easier to make and launder than collars, and they stay put instead of rolling up around the neck and getting rumpled and soiled quickly. Also the neck lines are cut low enough to keep them comfortable until the garment is outgrown in other ways. There is plenty of leeway too at sleeve, shoulder and crotch lines. In fact every garment designed in the Bureau is so cut as to give plenty of room where room is needed. For the mark of tight, restricting clothes may go further than skin deep. Nervous habits, lack of interest in games, poor posture, even abnormal sex impulses have all been known to come from ill fitting clothes worn during early years.

GAY GARMENTS FOR PROTECTION

That bright colored clothes are a protection to children is another recent idea that has come in with the increasing hazards from motor traffic. It stands to reason that the driver of a car is more likely to spot a little figure dressed in vivid red, or green, or blue, than in olive-drab or some dull color really intended to cut down the visibility of an army. Bess M. Viemont has combined gay colors for safety and self-help features in snug one-piece play suits for cold and wet weather. There is a special method even in the placing of the ankle plackets in front. A child can fasten them there more easily than on the side, and the instep strap slips immediately into place with no fuss of poking the toe through an opening. Moreover, fabrics as well as design give freedom without bulk. The directors of nursery schools where the suits have been tried say that the children no longer stay rooted to the sand pile because their outdoor clothes are too heavy to carry around. The silhouette of a youngster in one of these loose comfortable suits tells the story

too in contrast with the familiar little overstuffed figure with arms literally held out from the sides by layer on layer of thick, heavy wraps.

Another great advantage is that these garments are welcomed eagerly by their young wearers. Unlike the notion we sometimes have that practical clothes cannot be attractive, these do not sacrifice style to efficiency. They have utilized knowledge of cut and skillful fitting to bring out the best in their simple child-like lines. Children need clothes in which they feel at home—sturdy, easily laundered clothes, which can be most enjoyed by being forgotten.

The self-help bib is proving a boon to many nursery school directors who used to tie and untie twenty bibs around the necks of twenty wriggling youngsters every day. When Ruth O'Brien, who heads the textile and clothing research for the Bureau, visited schools two years ago, she found, odd as it may seem, that no one had thought to apply the self-help principle to bibs. Yet it was clear that children would be helped toward self-dressing if they could learn to adjust one simple article of clothing themselves day after day. So Miss O'Brien came back to the Bureau and set one of her staff to work on bibs. Here again fabrics as well as design were studied, and semi-absorbent, inexpensive ratine with bright colored bias binding was selected.

GOOD NEWS TRAVELS QUICKLY

The news of these self-help clothes is spreading through various channels. Traveling exhibits, which the Bureau lends to nursery schools and home economics departments in the colleges and universities, are so popular that they are scheduled months in advance. And no wonder. Mothers can of course get a far better notion of construction details, choice of fabrics and color combinations from the twenty-odd garments in each of these exhibits than can possibly be conveyed by the printed page. However, the leaflets describing and illustrating these new type children's clothes are in constant demand and there is still a supply on hand, free for the asking.

Patterns for a number of the designs have been made by commercial companies for sale through their regular services. Being a Government organization, the Bureau of Home Economics itself does not make or sell patterns, and it therefore welcomes the co-operation of commercial agencies. As to ready-to-wears, at least one manufacturer plans to have the self-help suits for the small boy on the market within the near future. Visitors who drop into the Washington laboratories, and they are legion and come from every point of the compass, also help to carry the word that at last the move to rationalize children's clothes is well on its way.

What Parents Are Learning from Laboratories

SIDONIE MATSNER GRUENBERG

Parents remain the final arbiters in adapting and utilizing scientific knowledge for the benefit of the individual child.

MODERN men and women, whatever their training and whatever their special interest or occupation, are well aware that in the thousand details of daily living fashions are constantly changing. Nobody claims that the new is generally better or more beautiful than the old; and yet we are confident that some of the more recent modes are actually improvements upon their predecessors. The daily food may be a matter of taste, of tradition, of local custom; but we feel that in some respects at least our diet is an improvement upon that of our ancestors. The clothes we wear may reflect taste and effective salesmanship; but to some degree we have improved upon the comfort and other virtues of the children's garments, at least.

To what extent and in what directions is it practicable to make sure that in the rearing of children changing fashions will be at the same time improvements? How shall we develop a critique of prevailing practices, of our own customary ways of feeling and acting toward children?

Within two generations we have asked parents to undergo two revolutions in their attitudes. First came the important discoveries in physiology, nutrition and psychology that made possible the formulation of definite procedures and specific prohibitions for the guidance of mothers. L. Emmett Holt's books, "The Care and Feeding of Children" and "The Happy Baby," in this country epitomized everything that science had to teach the mother at that stage, and symbolized the replacement of empiricism and tradition by scientific knowledge in the rearing of children. But with the accumulation of more knowledge it has become necessary to modify every generalization. Today it is no longer possible dogmatically to tell the eager parent exactly how much of this or how many minutes of that will serve the individual child. All teaching derived from the laboratory, however reliable, has to be qualified before being applied.

The extension of what has come to be called scientific research to the manifold problems posed by the living, growing child is, no doubt, in many cases a purely academic exercise. Young men and women

in the universities have to do a certain amount of "research" as a condition of obtaining their higher degrees; and for hundreds of them one problem is as good as another. Certainly the ordinary parent has never lost any sleep wondering whether a child's bones all become calcified at the same time, or whether a child's babbling is casual or systematic. We are, to be sure, concerned with suitable diet, adequate sleep, the establishment of a routine of elimination and the avoidance of numberless kinds of mischief; but until very recently it has seldom occurred to us that practical help is to be sought in the "research laboratory." Yet more and more we find the academic study of infants and children yielding results of practical significance, and more and more are parents learning to look to the scientist for practical guidance.

Even the necessarily brief survey possible within the scope of this single issue of CHILD STUDY suggests much that is of practical help on vital and everyday home questions—questions such as that of clothing with a maximum of comfort and a minimum of effort for both mother and child; or of meals with a maximum not only of food value but of pleasure, and a minimum of nervous wear and tear.

If these usable results of research are to be actually used, parents need, on the one hand, to overcome certain resistances and suspicions, and, on the other hand, to guard against certain easy compliances and enthusiasms. Our resistances come, for the most part, from the implied reflection upon our adequacy. Our parents did not need "scientific" knowledge about children, so why should we? Even if we are not altogether satisfied with ourselves we cannot help wondering how the extremely recent discoveries of the scientist can be so significant in contrast to the vast experience of the race. The answer lies in part in the fact that our standards of achievement are actually higher than they were in the past. A larger proportion of the babies born are carried on past the first year and past the tenth and past the fifteenth. Again, the household today is smaller, as well as the family, and this gives the ordinary parent opportunity to become acquainted with one or a few children of a given age,

whereas in the past everybody had normally the opportunity to become acquainted with many more representative samples, both in the course of his own development and in the course of his career as parent. It becomes the function of science to supplement the limited experience of the isolated parent with observations upon many children. With only such limited experience we know neither what to expect nor what to fear.

Once, however, the advantages of both broad and intensive studies have been recognized, there often follows a disposition to take over bodily such generalizations as seem significant. Here we need to guard against applying to the individual child what appears to be true of the "average child." If the table shows that the average or "normal" weight for a child of the age and height of mine is two pounds greater than the child's actual weight, is that something to worry about? Is it an indication that more food is required or a "richer" diet? If the average number of hours of sleep for the given age is "8 hrs. 39 min. 23 sec.," must I attach a stop-watch to the alarm clock, or try to scold him into additional sleep? However important the findings of the investigator regarding children in general or regarding the averages and norms, it remains for the parent to know the particular individual child who differs from all others in every detail; and it remains for the parent to apply the findings in terms of what is distinctive about this particular child.

With the progressive concentration of the parent's responsibility upon fewer children, there is increasing need of the generalized knowledge gleaned by the investigators. Notwithstanding the constant delegation of more and more special tasks by the home to outside agencies, the home remains the one continuous integrator and the primary, if not the final, interpreter of life to the child. Parents must, therefore, keep themselves informed as to what the various agencies are doing and attempting to do to their children, if they are to cooperate—and criticize—intelligently. Among these agencies are the schools of all grades and, in recent years especially, the nursery schools, in which scientific studies in great variety are being carried on as part of the routine.

It is desirable that the parent have some understanding and some appreciation of the scientific procedures that are applied to children. It sometimes happens that the scientist can suggest techniques for meeting this or that situation with more success than attends the homemade method. Eating is an example. When science said children *must* eat vegetables, earnest parents urged vegetables so forcefully that they defeated their own ends. Now laboratory techniques are proving that judiciously ignoring a child is a better aid to

good eating habits than is urgency. Frequently, according to these accounts, children have willingly cooperated in experiments, as Dr. Goodenough points out, where they might have been expected to object. Nursery schools repeatedly get from children a type of response which the same child may not give at home at all. Parents, who are and should remain so close to the child, can gain many practical suggestions and much insight from the behavior of children under the more objective management of the investigators.

It is, however, neither practicable nor desirable that parents assume toward their children the detached objectivity of the scientist, for after all the tasks of the two are not the same. The scientist is satisfied to find the answers to certain questions, to get the "facts." It is for the parent to apply these facts to the effective management of the child and of the environment. For his purposes, the scientist must keep the children healthy and contented; it is a special problem in the study of children under modern conditions to find scientists who are at the same time skilful in getting the children's friendly cooperation. For his purposes, the parent desires to keep his children healthy and contented, but he is striving for something deeper and less tangible, something often thought of as happiness, but at any rate transcending the immediate objectives in human contacts. In the absence of an intuition that tells us always and everywhere just what to do, we shall welcome the increasing opportunity to place reliance on a science that gives us clearer insight into the nature and development of children. Just as the physical and biological sciences have modified our practices so as to insure a larger measure of physical well being, we may hope that the new scientific findings will yield results in mental and spiritual health.

In much of the work at the research centers contributing to this discussion the cooperative relationship between the home and the laboratory is being utilized in a very practical way. In the limitation and application of all general findings regarding children, and in their further improvement or refinement, there is need for the supplementary observations contributed by parents as well as by scientists.

If the parent does not need to be a scientist, he needs nevertheless to have something of the spirit of the scientist, at least on the critical side. This does not mean that we are to reject the table of heights and weights because it does not agree with the attainments of our own child, although discrepancies of this type form the beginning of all truly scientific criticism.

It does mean the acceptance of individual variation, the search for sources of divergence, and the application of one's own experience and observation in combination with the findings of the scientists. It means the recognition of both the "rule" and the exception.

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Editors

ZILPHA CARRUTHERS FRANKLIN SIDONIE MATSNER GRIENBERG
JOSETTE FRANK MARION M. MILLER

CÉCILE PILFEL

CORA FLUSSER, *Advertising*
L. M. MACKIBBIN, *Circulation*

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News and Notes

"Every church a school in Christian living" was the theme of the International Convention of Religious Education held at Toronto from June 23 to 29. Over six thousand attended the Convention which offered an informative and inspirational program on such topics as: "The objectives of religious education;" "The present program and the unmet needs;" "The impact of united forces." Study and conference groups discussed the importance of presentday religion in the home and school to the child and adult, and the need of adapting sound principles to local situations on a practical basis. Because the program was a culmination of the extensive studies carried on by field and professional groups and local church workers, the Convention was a creative and program-building enterprise. The Christian Youth Conference of North America met in connection with the Convention.

The importance of home economics in the schools and home, its development along research lines and the success of combining home economics and social work were discussed at two separate conferences—in Denver, Colorado, where the American Home Economics Association held its annual meeting from June 24 to 28, and in Columbus, Ohio, from June 29 to July 4, under the auspices of the National Education Association. Dr. Louise Stanley spoke at the Denver Conference on the possible contributions of home economics to the White House Conference on Child Health and Protection, in connection with which she is chairman of the committee on the family and parent education.

At the National Conference of Social Work which was held in Boston from June 8 to 14, the methods of dealing with families and children in trouble took up a large part of the program. Such topics as unemployment, old age assistance, immigration, health, mental hygiene, habit training, parent-child relationships, delinquency and the juvenile courts were discussed in the light of the newer parental education.

The Second International Conference of Social Work is to be held at Frankfort-on-the-Main, Germany, in June, 1932.

Due to the enthusiastic response on the part of local branches of the Inter-Community Child Study Committee, the Field Work Department

Inter-Community Child Study Committee of the Child Study Association of America has made considerable progress in its work among Negroes. The teachers' group, sponsored by the

Washington branch, is planning to follow its study on "Fundamentals in Child Study" with a course in "Sex Education," led by Miss Margaret J. Quilliard, Director of Field Work. They are also planning to extend their child study activities to include other groups in the city. The Chairman of the Baltimore branch is enlarging her committee and hopes under its auspices to lead a course in "Fundamentals in Child Study." The members of the study groups organized by the Englewood and Montclair branches are hoping to continue and extend their work. The North Harlem branch will again pursue its policy of conducting a series of public meetings throughout the district and of sponsoring as many study groups as can be adequately cared for.

The recent conference was considered most successful by the fifty-two delegates from New York, Brooklyn, Englewood, Montclair, Baltimore and Washington. This success was largely due to the fine cooperation which existed between the white and Negro speakers, and to the active participation by committee members and their loyal supporters.

"New Trends in Education" was presented by outstanding leaders in a series of lectures held during

A Parental Project in a Suburban Community the past season, under the auspices of the White Plains chapter of the Child Study Association of America.

That this was more than a mere "lecture course" was proved by the enthusiastic participation of parents and teachers—a response which indicates in some measure the real interest, as well as the effort to be forward looking, of a suburban community.

This year's work was not wholly a new venture,

but rather the outgrowth of a number of years of intensive study of child psychology, under such leaders as Dr. Harry Overstreet, professor of philosophy at the College of the City of New York, and Dr. Bernard Glueck, psychiatrist. Maintaining the study always on a thoroughly objective basis, the group had already taken up in turn: the child's reactions to his environment from infancy through adolescence; and the emotional responses of the child to the many confusing and difficult problems he encounters today. The latter subject was also approached from the point of view of parental attitudes. These studies led logically to a consideration of the teacher-child relationship. Thus the composite course on the new trends in education, which has just been completed, fell naturally within the scope of the group's work.

Dr. Harold Rugg, professor of education at Teachers College, and internationally known as a leader in the new educational movement, opened the course with a survey of this field. The aims of the new education are, he suggested, twofold. First, to "induct the child into a tolerant understanding of the world," which the old school considered the sole aim of education, and secondly, "to help the child preserve his individuality and to encourage his own mode of response." This latter concept is one of the important contributions of progressive education.

In the practical application of these ideas several differences between the formal and the freer types of school are apparent. Probably the first that meets the eye of the casual visitor to a new type schoolroom is the absence of any furniture that is nailed down to the floor. "Free the legs of the child and then free his larynx, and you are well on the way to educating him," said John Dewey, dean of educators, and in accordance with this precept as much freedom of the body is given each child as is practical in any busy workroom where possibly several different projects are being carried on by as many different children. Each child is intent on his business and is not hampered by being regimented into a row of immovable desks. The result may be more bustle and activity in the room, but also decidedly more cerebration.

Among the educators who also discussed these new trends were Miss Rose Birmingham, principal of the new George Washington public school in White Plains, and W. W. Beatty, superintendent of schools in Bronxville. The progressive ideals of both these teachers have been outstanding. Along with all forward looking educators they feel that since conditions of life are changing so rapidly education must become more flexible, and although old methods and content are not to be rejected they must be changed so as to fit in with the changed world.

The school, then, is to be fitted to the child, not

the child to the school. To many people these new methods seem to lack unity, but upon closer study one finds, for instance, that scientific experiments performed by many experts in the field of education underlie the means now employed in teaching the "skills" or "tool subjects"—reading, writing and arithmetic.

To imbue the child with a "tolerant understanding of the world," the actual world he will meet is brought into the school life. Miss Elizabeth Irwin, director of the teaching in the lower grades of Public School No. 41 in New York City, is carrying out in her kindergarten and first and second grades a project which is as successful as it is unique in the New York public school system. She described how her classes visit ocean liners, the New York Edison plant, the New York Telephone system, bakeries, dairies and other places of similar interest. They interview farmers who have brought their vegetables to the large produce markets in lower Manhattan and so glean as much information as possible at first hand. This training in true research methods is not only invaluable in itself but it makes the school a real storehouse where the child is taught to unearth all these facts which he will need and use as a citizen.

There is also in the new school more individual care of the child by the teacher, not only as to his mastery of the subjects taught, and his adjustment to his surroundings as a social being, but as to his physical development as well. There is more free play of mind on mind, more research by even the very young children, more emphasis placed on the children's own contributions to the subject being discussed, than was ever possible under the more rigid regime.

Since the time for the mastery of the skills has been reduced under the new methods to only one-fourth of the school time and that of mastery of content to one-half, one-fourth is left for creative work. Hughes Mearns, professor of education in New York University and author of "Creative Youth," described many striking instances of latent talents in children, the freeing of which makes them "totally acting organisms." Both Professor Mearns and Dr. Rugg agree that the great preponderance of public school teachers have much creative ability, which, if it could be released from the dwarfing effects of formal teaching, would in turn be instrumental in freeing a great many inhibited gifts among their pupils.

Progressive education has been experimentally proved as workable in public schools, even in the most congested communities. This fact, together with the remarkable interest shown by both parents and teachers in such a group of talks as those held in White Plains, holds much promise for the future.

The 1930 season of the Summer Play Schools of the Child Study Association of America will open on July 7 and will include twenty-two schools in New York City, and one each in Cleveland and Detroit and possibly one in Memphis, Tenn. An all-day program is planned for the children to cover many varying activities such as homemaking, handcraft, dancing, workshop, dramatics and music, with special emphasis placed on nature study. In at least two schools, there will be a combination of camp and play school life under the guidance of the Summer Play School teachers. One of the most important features of the work is an ever conscious endeavor to socialize the children, with the hope that attitudes of friendly cooperation will be carried over into their family relationships. Having won the generous support of the Board of Education in New York City, the Summer Play Schools Committee will continue in their efforts to interest educational groups in other cities in order to promote the Summer Play Schools idea throughout the country.

A well selected and classified list of "Children's Books for the First Three Grades" has been prepared

Children's Books for First Three Grades

and published in mimeographed form by the Primary Group of the Association of Private School Teachers of New York.

The listing has been arranged in two parts. The first part is general, including fiction, myths and fables, nature books, verse, activity books, life in other countries, industries and books of information about the parent. The second part is a selection of books to use with units of work, including such subjects as primitive life, the Vikings, Indians, colonial life, New York City presentday life, transportation, the farm, wheat, milk, and clothing. This combined function of leisure reading with the work units of the schoolroom makes the list helpful to both parents and teachers.

The list is available for distribution and may be obtained from the Chairman of the Primary Group, Marion P. Stevens, Ethical Culture School, 33 Central Park West, New York City. The price is one dollar. (Seventy-five cents to members of the Association of Private School Teachers.)

The American Institute Children's Fair arranged by the School Nature League and sponsored by The American Museum of Natural History will be held from December 4 to 10, and is designed to foster a scientific interest in agriculture, gardening, nature study and conservation.

Summer Play Schools

Announcements

Evidences of the constantly widening circle of interest in education are being frequently uncovered. *The New York Times* will begin soon to run a series of articles on progressive education; the Theatre Guild wishes information, through its publications, on what is being done in the progressive schools in the use of art.

The Playground and Recreation Association, at 315 Fourth Avenue, New York City, is offering its services to such schools, communities, and other organizations throughout the country as are taking an active part in vitalizing the play hours of America's millions. The Association is thus making generally available the benefits of long experience and a trained staff, in the study of one of the most important problems of our day.

A Cottage Mothers' Institute will be held from July 24 to August 21 under the auspices of the New York School of Social Work. The lectures and discussions will cover such topics as pertain to the mental and physical care of children in institutions.

Walter Damrosch will conduct a new series of radio concerts, beginning October 10 and continuing through April 17, which are adapted to pupils from the third grade to students in the high schools and colleges. The programs will include a study of twelve of the most important composers from the standpoint of orchestral music and a discussion of the instruments in the orchestra.

A new series of educational programs has recently been launched by the National Broadcasting Company. Among the speakers to take part in the fifteen-minute discussions are Dr. Shailer Mathews, Dean of the Divinity School of the University of Chicago, Dr. John Erskine, President of the Juilliard Foundation, and Dean John W. Withers of New York University.

RADIO TALKS WEAF FRIDAYS 2:15 P.M.

Will spanking "cure" a child from running into the street?

Questions sent in by parents will be answered every Friday afternoon throughout the summer by staff members of the Child Study Association of America.

*Mail questions to WEAF, 711 Fifth Avenue
New York City*

Contributors to This Issue

FLORENCE L. GOODENOUGH

Guest Editor

Research Associate Professor in the Institute of Child Welfare, University of Minnesota

E. LEE VINCENT

Psychologist of the Merrill-Palmer School,
Detroit

WILLIAM E. BLATZ

Director of St. George's School for Child Study, Toronto; Professor of Psychology, University of Toronto; Member of Research Staff, Canadian National Committee for Mental Hygiene; Consultant, Toronto Juvenile Court Clinic

**DOROTHY SWAINE THOMAS
MARY SHATTUCK FISHER**

Research Associates, Child Development Institute, Teachers College, Columbia University

ADA HART ARLITT

Head of Child Care and Training Department, University of Cincinnati

MANDEL SHERMAN

Director of the Washington Child Research Center, Washington, D. C.

HAROLD E. JONES

Director of Research, Institute of Child Welfare, University of California

LYDIA J. ROBERTS

Associate Professor of Home Economics, University of Chicago

RUTH VAN DEMAN

Associate Specialist in charge of information, Bureau of Home Economics, United States Department of Agriculture

SIDONIE MATSNER GRUENBERG

Director of the Child Study Association of America; Lecturer on Parent Education at Teachers College, Columbia University

CURRENT INFORMATION ON CHILD DEVELOPMENT RESEARCH

For those who wish more detailed information along the line of child development research there are certain sources of information in addition to books. Most of the research centers have available printed material on their own work; much current information in various research fields is also published in periodicals such as the following:

American Journal of Psychology, Ithaca, N. Y.

Child Development Abstracts and Bibliography, Washington, D. C.

Child Development Quarterly, Baltimore, Md.

Child Health Bulletin, New York, N. Y.

Childhood Education, Baltimore, Md.

Genetic Psychology Monographs, Worcester, Mass.

Journal of Experimental Psychology, Princeton, N. J.

Journal of General Psychology, Worcester, Mass.

Pedagogical Seminary and Journal of Genetic Psychology, Worcester, Mass.

Teachers College Record, New York, N. Y.

Announcing

NEW HEADQUARTERS

of the

Child Study Association
of America

221 West 57th Street

New York City

Because of its continued growth, the Association is planning to move into larger quarters during the early part of August. Notices of opening the new headquarters will be sent out before the beginning of the fall season.

IN THE MAGAZINES

Changes in the Theory of Religion. By M. C. Otto. *Mental Hygiene*, April, 1930.

The writer points to the economic and scientific forces affecting the social conditions of mankind as factors in the change of contemporary religious concepts. He clearly defines the position of the modernist and humanist and concludes with the ominous note that unless provision is made for "the sense of mystery, the feeling of reverence, the will to self-surrender," taken care of by the religion of our fathers, the makers of "earth centered religion" may find their religious movement becoming "a short-winded, if glorious, spurt."

A Consideration of Character Training and Personality Development. By Jessie Taft. *Mental Hygiene*, April, 1930.

The attitude of character training defined as "the seeking of a more or less external control in terms of a social norm" is contrasted with the attitude of personality development, "the tendency to accept an underlying developmental process peculiar to the individual, which is not so easily subject to control in terms of any norm and may be subversive of socially desirable adjustment." The author pleads for study of the individual as an emotional entity without control by way of a social norm.

Finding a Way in Mental Hygiene. By Frankwood Williams. *Mental Hygiene*, April, 1930.

Dr. Williams makes a broad chronological sketch of developments in the field of mental hygiene. He traces the change of emphasis from particular interest in nervous and mental diseases and the classification of mental types to the present approach which traces back of the sources and maladjustments. Some of the social topics touched upon are the contribution of psychoanalysis, the importance of the childhood period, the growing need of trained workers—psychologists, psychiatrists and psychiatric social workers—and the need of recasting the criminal law in the treatment of delinquency.

Individual Implications of the Family Pattern. By James S. Plant. *The Family*, June, 1930.

Clinical evidence, according to the writer, shows that young children, adolescents and parents "crave the persistence of the pattern" and that there exists a psychic need for its existence. This need is amplified in its relation to the child's sense of security and the matter of adjustment to authority.

The Part-Time Job. By Lorine Pruette. *The Woman's Journal*, June, 1930.

Advantages and disadvantages both to the worker and employer of part time are set forth by the writer. Together with the changes in the home and in industry, the trend for part-time jobs seems on the increase.

A Press Consciousness Wanted. By Millicent J. Taylor. *Progressive Education*, June, 1930.

The writer, who is connected with an outstanding newspaper and who has had the advantage and experience of educational work, gives valuable advice on how to reach the general public with the facts of the newer ways of education by means of the press.

Sex as a Constructive Social Force. By Grace Loucks Elliott. *Mental Hygiene*, April, 1930.

Sex as well as all other "original drives of human nature" begins by being asocial rather than either constructive or destructive. As with any other human desire it must be socialized by a process of education. Sex is no isolated factor in human life. "Taken in relation with the other impulses and needs of human nature, it can give drive and dynamic to the whole."

Some Guiding Principles in Understanding Personality. By Gordon W. Allport. *The Family*, June, 1930.

It is the single personality and not the group study of personality with which the author concerns himself. He formulates a practicable science for such a study.

Understanding the Adolescent. By Esther L. Richards. *Journal of the American Association of University Women*, June, 1930.

Dr. Richards demonstrates points of friction between parent and adolescent; ways of approach in the matter of giving him opportunity for independent action, in considering his vocation, and in the much discussed views on recreation and amusement. Intelligent management of the adolescent should aim to interpret his behavior rather than judge his conduct.

The Young Offender. By Max Levin. *Hygeia*, June, 1930.

What causes the youngsters to misbehave and what to do about it is helpfully discussed in this paper. The positive needs, such as health, economic security, emotional security, a chance for growing up emotionally, disclose the author's implications of the causes for misbehavior.

A TEMPTING MISCELLANY OF RECENT BOOKS FOR CHILDREN

I Spend the Summer is an appealing little book—just the right size to tuck into a small person's suitcase—with gay jingles telling of happy experiences far and near.

The new Social Science Readers comprise *Mr. Brown's Grocery Store*, *Billy's Letter*, *Jip and the Fireman*, and *Mary and the Policeman*. Despite their formidable subhead, these little volumes should be welcomed by the young reader. The subjects are of perennial interest, and the clear illustrations and simple wording successfully meet a real need.

This Way and That contains over twenty time-tried singing games, in large, attractive modern dress. Easy notation, clear manuscript wording and charming illustrations make this a rare addition to the nursery.

Jane-Louise's Cook Book is a perfect kitchen adventure. The subject is fascinating; the recipes are simple, tempting and practical. The book, with its illustrated instructions, appeals to the youngest as well as to the older would-be cook.

How the Derrick Works is a technical and detailed picture book for the mechanically minded child. Who has not gazed spellbound into deep excavations swarming with men and machines, or gazed upward as the giant girders rose in trellised tiers against the sky! Such sights have enthralled the ten-year-old, as well as his older brother, and it is to them that this book is addressed. Its clear illustrations in black and white and its simple text will answer their innumerable "whys" and "whats."

The Picture Book of Ships presents in picture and text the historic past of the ship, and describes in detail the mysteries of sails and "things" as they are today. The large poster-like illustrations are dramatic, and little marginal diagrams make the explanations clear and satisfying. This book should answer another unending stream of questions for the child who has felt the lure of the sea.

Watching Europe Grow is a novel contribution to travel literature and travel psychology. A resourceful uncle shows his niece and nephew Europe, as it evolved from epoch to epoch. Starting with Rome, he and his young charges seem to travel on the crest of history from Italy into ancient France, to the great German cities of the Middle Ages, and on from the

glory that was Versailles down to the present day. It is difficult to judge what appeal this volume will have for the young reader. But, despite its lapses into flippant colloquialisms, it offers a host of suggestions for parents, as a method of approach in traveling with young people. Cornelia Parker's ample bibliography should prove of great help. The book is profusely illustrated by photographs.

F. S. S.

Roaming the Rockies will serve as an excellent guide for anyone planning a trip anywhere between Yellowstone, Glacier and Mesa Verde. John T. Faris knows the National Parks and their environs in an intimate personal sort of way. He knows folks as well as scenery and will tell you anecdotes about this spot and that. Though he is very proud of the improvements which now enable thousands to view in comfort the grandeur which only the hardy and courageous could formerly approach, he does occasionally offer temptation to the less tender footed to explore more remote trails. The book is written in an easy narrative vein and is illustrated with fine photographs.

M. S. K.

Children's Book Committee of the
Child Study Association of America

I Spend the Summer. By James S. Tippett. Harper & Bros. 63 pp. \$75.

Social Science Readers: *Mr. Brown's Grocery Store*, *Billy's Letter*, *Jip and the Fireman*, *Mary and the Policeman*. By Helen S. Read and Eleanor Lee. Charles Scribner's Sons. Each 36 pp. Each \$.60.

This Way and That. By Edna Potter. Oxford University Press. 24 pp. \$3.00.

Jane-Louise's Cook Book. By Louise Price Bell. Coward-McCann, Inc. 60 pp. \$1.50.

How the Derrick Works. By Wilfred Jones. The Macmillan Co. 43 pp. \$2.00.

The Picture Book of Ships. By Peter Ginnage. The Macmillan Co. 64 pp. \$2.00.

Watching Europe Grow. By Cornelia Stratton Parker. Horace Liveright. 489 pp. \$4.00.

Roaming the Rockies. By John T. Faris. Farrar & Rinehart. 333 pp. \$3.00.

GROWTH DEMANDS CHANGE

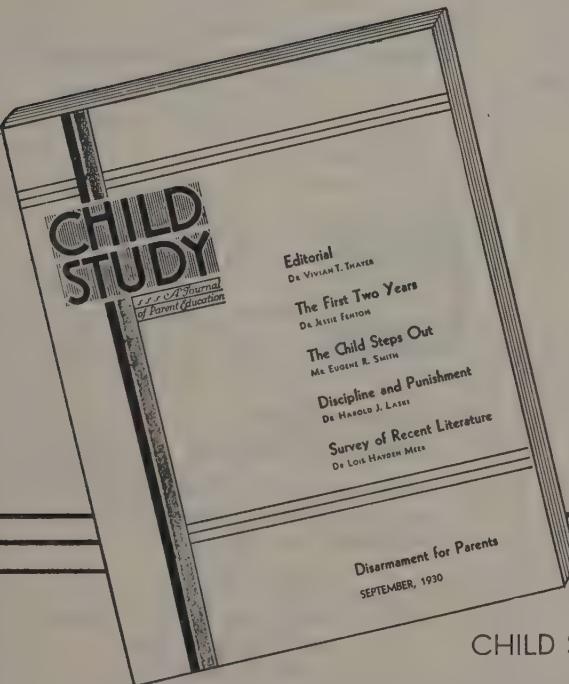
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Child Study, besides improving and widening the scope of its editorial content, enlarging its book review section and news notes, will take on a newly designed cover and a complete change in format. It will be published from September through June, beginning with Volume Eight, first issue of which will be mailed September first.

The subscription will remain the same,

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